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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2005

SAMPLE COSTS TO PRODUCE
ORGANIC
WINE GRAPES

Cabernet Sauvignon

NORTH COAST REGION
NAPA COUNTY

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CONTENTS

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INTRODUCTION

Sample costs to produce organic wine grapes under drip irrigation in the North Coast Region, Napa County are presented in this study. The hypothetical vineyard used in this report was established conventionally and then converted to organic production. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on production practices considered typical for the crop and area, but these same practices will not apply to every situation. The sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, "*Your Costs*", in Tables 1 and 2 is provided for entering your farming costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or your local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis. Current and some archived studies can be downloaded from the department website at http://coststudies.ucdavis.edu or obtained from selected county UC Cooperative Extension offices.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 7 and pertain to sample costs to produce organic wine grapes in the North Coast – Napa County or Napa Valley Appellation. Within the Napa Valley Appellation are 13 subappellations. For district location and other related information see the websites www.napavintners.com and www.napagrowers.org. The cultural practices shown represent operations and materials considered typical in a well-managed vineyard in the region. The costs, materials, and practices shown in this study will not be applicable to all situations. Establishment and cultural practices vary by grower and the differences can be significant. The study is intended as a guide only. *The trade names and cultural practices shown in this report do not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of similar products or practices.*

Farm. The hypothetical farm, located on land with a 10% slope, is owned and operated by the grower. The 35 contiguous acre farm consists of 30 acres on which wine grapes were established conventionally (see *Sample Costs to Establish a Vineyard and Produce Wine Grapes, North Coast Region, Napa County, 2003* at http://coststudies.ucdavis.edu) and then converted to organic production, and five acres that are occupied by roads, irrigation systems, and farmstead. Management companies farm approximately 40% of the farms in the area. For this study we incorporated information from both farmer and management company operations to estimate costs for a farm managed by the owner. Management companies charge a fee for their services, but no fees are shown in this study. Farms operated by management companies will most likely not have an equipment inventory as shown in Table 5.

Vines. Field-grown dormant benchgraft vines, Cabernet Sauvignon variety, are planted on a 7 X 4-foot spacing at 1,555 vines per acre. Vines are trained to a bilateral cordon and spur pruned. Cordons are the horizontal branches, and spurs are the bearing units on the cordon. The grapevines are assumed to begin yielding fruit in three years and to produce for an additional 22 years.

Trellis System. The trellis is a vertical shoot positioning system (VSP). The system in this study utilizes 3-inch X 8-foot notched steel line posts spaced 16-feet apart (every 4th vine), with three training stakes (1/4-inch round tensile rod X 4-feet) at the vine locations in between. End posts are 3-7/8 inch X 10-foot steel tube (well casing) with a spade. No additional anchors are required. Seven permanent wires are secured to the end posts – 14-gauge fruit wire and 14 gauge drip wire, 2 pairs of 13 gauge canopy wires and a single canopy wire at the top.

Production Cultural Practices and Material Inputs

Prune. Pruning is done during the winter months, February in this study. The prunings are placed in the vine centers and chopped during the first mowing. Winter tying, where cordons are tied to the cordon wire with twine at the trunk and at each end of the cordons is done in March. Pruning costs in this study are based on an hourly rate, although much of the pruning in the region may be done by piecework.

Canopy Management (CM). Canopy management begins with trunk and cordon suckering in April. A second suckering pass in May also includes shoot thinning and positioning. Passes in June and July are made for leaf removal, lateral removal, and wire lifting. Crop thinning and vine/cane trimming are done in separate passes in July. Shoot removal is the operation whereby weak shoots, which lack vigor and do not originate from the fruiting spur buds, are removed. In the early June pass after fruit set, some basal leaves are removed in and around the fruit zone to allow for exposure and better air movement. Positioning and thinning shoots allows the vines space to develop good fruit clusters, and also, opens the canopy to allow greater air movement through the vines and around the clusters. Canopy management varies among growers.

Irrigation. Water is from wells and incurs a pumping cost. Pumping costs from grower input ranged from $30 to $50 per acre. In this study 5.73 acre-inches are applied and water is calculated to cost $6.98 per acre-inch based on the $40 grower average for pumping cost. Once per week over 20 weeks, water at five gallons per vine is applied from late May to September/early October. Irrigation labor is calculated at 0.10 hours per acre per irrigation. No assumption is made about effective rainfall.

Frost Protection. It is assumed in this study, that the wind machine will run 50 hours per season (April in this study). The machine provides frost protection for the lower 10 acres.

Fertilization. In July at veraison (i.e. 10% of the fruit has started to ripen), 12.5 pounds of K (potassium) or 25 pounds of potassium sulfate (0-0-50) is applied through the drip system. During the fall (September/October) in alternate years, four tons of compost composed of grape pomace and organic waste is spread in the vineyard by a custom hauler/spreader. Because the compost is applied in alternate years, one-half of the cost or two tons per acre are charged to the vineyard each year.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Grapes.* **Pesticides mentioned in the study are not recommendations, but those commonly used in the region.** For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. For additional information and pesticide use permits, contact the local county Agricultural Commissioner's office.

Pest Control Adviser. Written recommendations are required for many pesticides commercially applied and are made by licensed pest control advisors (PCAs). In addition the PCA will monitor the field for pests and nutrition. Growers may hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. Management companies may have their own PCA.

Insects. Leafhoppers are the most common insect pest in the North Coast. In Napa County, populations are usually below treatment thresholds. In this study, we assume that no insecticides are needed.

*Diseases***.** Assuming moderate disease pressure, powdery mildew treatments begin with one Thiolux (micronized wettable sulfur) application in mid-April and one application in May. Sulfur dust is applied two times in May and three times in June. An application of Serenade is made in July. All applications are made with the grower's equipment. Micronized sulfur and Serenade are applied to every row and sulfur dust at full rate to alternate rows. Additional sulfur applications may be needed in wet or high disease pressure years.

Weeds. In this vineyard, vine row weeds are controlled mechanically in April, May, and July with an inline-cultivator. A permanent cover crop is planted in the row middles and is described under cover crop.

Cover Crop. A permanent cover crop, planted in October of the second establishment year, is allowed to reseed in the spring. The crop is mowed once in March and again in May after seed formation. The cover crop is dried down by late spring/early summer. The crop may need to be replanted periodically over the life of the vineyard, but no replanting costs are shown in the study. Depending on the mixture of plant species, cover crops may provide dust and erosion control, increase soil organic matter, provide nitrogen fertilization, and act as a host for beneficial insects.

Erosion Control. Farms located on a slope must implement an erosion control plan. In this study the grower uses silt fencing and straw around the field perimeter. The erosion control cost is a typical value over

years as suggested by participating growers. The cost includes the reusable silt fencing, additional straw if necessary and labor for winter maintenance and checking the system, especially during rainfall periods.

Harvest. The crop is hand picked in September by a labor contractor. In normal producing vineyards (4-5 tons), contractors may charge $120 to $150 per ton. Charges may be lower or higher due to yield, trellis system, and ground terrain. To determine number of pickers for harvest, an industry assumption is one-ton per day per picker, assuming an eight-hour day. Bin handling includes use of the grower owned tractor and three bin trailers with one-half ton bins, two tractors rented and a forklift rented each for two-weeks. The grapes are handpicked into the bins, loaded on the grower owned flatbed truck and delivered to the winery. The truck holds 16 bins and takes one hour per roundtrip.

Yields. Yield maturity is reached in the fifth or sixth year. An assumed yield of 5 tons per acre is used to calculate returns in the production years. Typical yield range for Cabernet Sauvignon in Napa County is 3.5 to 6.5 tons per acre.

Returns. A price premium for organic wine grapes may be paid by some wineries, but is not a common practice in the area. Therefore, the organically produced grapes in this study are sold at the same price as conventionally produced wine grapes. A price of a $3,928 per ton for Cabernet Sauvignon wine grapes is used in this study. The price is an average of the 2002 to 2004 weighted average grower returns as reported in Table 6 each year in the Final Grape Crush Report. Net returns at different yields and prices are shown in Table 4.

Assessments. The Napa Valley Grapegrowers, a voluntary organization, charges membership dues of $10 per net acre planted, bearing and non-bearing, with a minimum annual fee of $250 per member per year and a maximum annual fee of $3,000. The organization's purpose is to "uphold the reputation of this valley as one of the premium winegrape growing regions in the world." The assessment is not included as a cost in this study. Other assessments not included are for Pierce's Disease and glass-winged sharpshooter control programs in which the growers are assessed $2 per $1,000 of crop returns (assessed to the grower and paid by the processor) by the state and $2.20 per acre by the county (assessment varies each year), a Napa County farmworker housing assessment of $9.25 per acre, stormwater fee of $39 per site, and fuel storage fee, such as the propane used by the wind machines, of $324 or $486 (depending on material volume) plus $24 surcharge to the state.

Organic Assessments. All growers in California who sell products as organic are required by state law to register with the California Department of Food and Agriculture (CDFA) and pay an annual registration fee based on gross organic sales. In addition, these growers are required by federal law to be certified by a third-party USDA accredited certifier. An estimated cost of $60 per acre for registration and certification fees is used in this study. It should be noted that grapes grown using organic methods but not marketed as organic do not need to be registered or certified.

Pickup/ATV. The grower uses the pickup for business and personal use. The assumed business use for the pickup is 4,500 miles per year for the ranch. The All Terrain Vehicle (ATV) is used on the ranch for checking the vineyard and irrigating.

Labor. Labor rates of $18.50 per hour for machine operators and $13.70 for general labor includes payroll overhead of 37%. The basic hourly wages are $13.50 for machine operators and $10.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for vineyards (code 0040), and a percentage for other possible benefits. Workers' compensation insurance costs will vary among growers, but for this study the cost is based upon the average

industry final rate as of January 1, 2005 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power Take Off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $1.51 and $2.05 per gallon, respectively. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 7.65% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

Risk. The risks associated with crop production should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks, which affect profitability and economic viability. Growers may purchase Federal crop insurance to reduce the production risk associated with specific natural hazards. Insurance policies vary and range from a basic catastrophic loss policy to one that insures losses for up to 75% of the crop. Insurance costs will depend on the type and level of coverage.

Cash Overhead

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, sanitation services, equipment repairs, and management.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of all property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.690% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $529 annually for the entire farm.

Sanitation Services. Sanitation services provide portable toilets for the vineyard and cost the farm $1,175 annually. The cost includes one double toilet unit with washbasins, delivery and pickup, and five months of weekly servicing. Costs also include soap or other suitable cleansing agent, and single use towels. Separate potable water and single-use drinking cups are also supplied. Contract labor providers may include this service for their work force and therefore sanitation fees would not be a direct cost to the grower.

Management/Supervisor Wages. Salary is not included. Returns above costs are considered a return to management and risks.

Office Expense. Office and business expenses are estimated at $300 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop and office utilities, and miscellaneous administrative charges.

Investment Repairs. Annual repairs on investments or capital recovery items that require maintenance are calculated as 2% of the purchase price. Repairs are not calculated for land and establishment costs.

Non-Cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment, vineyard establishment, and other farm investments.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in Table 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of 6.01% used to calculate capital recovery cost is the USDA-ERS's ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector.

Establishment Cost. Costs to establish the vineyard are used to determine capital recovery expenses, depreciation, and interest on investment for the production years. Establishment cost is the sum of the costs for land preparation, trellis system, drip system, planting, vines, cash overhead and production expenses for growing the vines through the first year that grapes are harvested minus any returns from production. The establishment cost (see *Sample Costs to Establish a Vineyard and Produce Wine Grapes, 2003, North Coast Region – Napa)* for this study is $26,579 per acre or $797,370 for the 30-acre vineyard. The establishment cost is spread over the vineyard's 22 producing years.

Irrigation System. The previous vineyard is assumed to have a well, pump, and filtration/injector station that are included in the land cost.

Land. Bare land available for vineyard establishment is valued at $30,000 to $120,000 per acre. Land in this study is valued at $120,000 per acre or $140,000 per planted acre (30 acres). Land planted with resistant rootstock vines is valued from $50,000 to $180,000.

Building. The building complex is a 400 square foot metal building or buildings on a cement slab.

Tools. This includes shop tools, hand tools, and miscellaneous field tools such as pruning tools.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are in the Whole Farm Equipment, Investment and Business Overhead Tables. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

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For information concerning the above or other University of California publications, contact UC DANR Communications Services at 1-800-994-8849, online at www.ucop.edu, or your local county UC Cooperative Extension office.

Information Sources for Organic Production in California

National regulations, legal definition of organic:

National Organic Program, USDA. www.ams.usda.gov/nop/index.Net.htm

National Organic Standards Board. http://www.ams.usda.gov/nosb/

Organic Materials Review Institute (OMRI). http://www.omir.org/OMRI_brand_name_list.html

California regulatory agencies:

California Organic Program, CDFA. http://www.cdfa.ca.gov/is/fveqc/organic.htm

Organic Food Processor Registration, CA Dept. of Health Services. http://www.dhs.ca.gov/fdb/HTML/food/organreq.htm

Sources of marketing information:

Organic Trade Association. http://www.ota.com

Organic Farming Research Foundation. http://www.ofrf.org

The Hartman Group. http://www.hartman-group.com

The Certifiers listed below are registered to Certify in California. (updated August, 2004)

American Food Safety Institute (AFSI) 705 Bay St. Chippewa Falls, WI 54729 Contact: Karl G Kolb, PhD 715-723-4915 E-mail **info@goafsi.com** Website: **www.goafis.com** Scope: crop, handling	**California Certified Organic Farmers CCOF** Brian McElroy Certification Services 1115 Mission Street Santa Cruz, CA 95060 831 423-2263 ext. 16 E-mail: brian@ccof.org Website http://www.ccof.org/
California Organic Farmers Association Laura Horne 3678 North Modoc Kerman, CA 93630 559 842-5100 E-mail: cofa2000@cofa.net Website http://www.cofa.net/	**Global Culture Organic Services** Linda Van Hook P.O. Box 1640 Crescent City, CA 95531 (707) 464 - 6913 E-mail: globalculture@earthlink.net Website http://www.globalculture.us/
Guaranteed Organic Certification Agency Charles Heermans 5464 Eight Street Fallbrook, CA 92082 760 731-0496 E-mail: heermans@tfb.com Website http://www.goorganics.org/	**International Certification Services, Inc.** Annie Kirschenmann 301 5th Ave SE Medina, ND 58467 701 486-3578 E-mail: info@ics-intl.com Website http://www.ics-intl.com/
NutriClean (Formally Scientific Certification Systems) Lenin Ovando 2000 Powell St. Ste 1350 Emeryville, CA 94608 510-452-8012 E-mail: lovando@scscertified.com Website http://www.scscertified.com	**Oregon Tilth Certified Organic** Chris Schreiner 470 Lancaster Dr., NE Salem, Oregon 97301 503 378-0690 (press 8) E-mail: organic@tilth.org Website http://www.tilth.org/
Organic Certifiers Susan Siple 6500 Casitas Pass Road Ventura, CA 93001 805 684-6494 E-mail:Organic@west.net **Website http://www.organiccertifiers.com/**	**Organic Crop Improvement Association International, Inc.** Samuel K. Welsch 6400 Cornhusker, STE 125 Lincoln, NE 68508 – 1172 402 477-2323 E-mail: info@ocia.org Website http://www.ocia.org
Organic National and International Certifiers 9415 Kramerwood Place Los Angeles, CA 90034 Contact: Howard Sharfman 310-287-1449 E-mail: BeOrganic@organicnandi.com Scope: crop, livestock, wild crop, handling	**QAI, Inc.** Ellen Holton 9191 Towne Center Drive , Ste. 510 San Diego, CA 92122 858 792-3531 E-mail: qai@qai-inc.com Website http://www.qai-inc.com/

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Table 1. COSTS PER ACRE to PRODUCE ORGANIC WINE GRAPES

NORTH COAST - Napa County 2005

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Weed: Cultivate Vine Row	3.87	86	31	0	0	116	
Weed: Mow Middles	2.00	44	17	0	0	62	
Erosion Control-Materials/Labor	0.00	0	0	200	0	200	
Frost Protection	1.67	23	0	46	0	68	
Fertilizer through Drip (Potassium)	0.00	0	0	4	0	4	
Compost (includes haul, spread) 1/2 rate*	0.00	0	0	64	0	64	
Irrigation	2.00	27	0	40	0	67	
Disease: Mildew (Thiolux Sulfur) 2X	2.00	44	15	6	0	65	
Disease: Mildew (Sulfur Dust) 5X	2.50	56	18	11	0	85	
Disease: Mildew (Serenade) 1X	1.00	22	8	26	0	56	
Prune: Cordon-spur pruned	31.10	426	0	0	0	426	
Prune: Tie Canes	5.00	69	0	0	0	69	
**CM: Trunk/Cordon Suckering	27.00	370	0	0	0	370	
CM: Sucker/Shoot Thin/Shoot Position	27.00	370	0	0	0	370	
CM: Leaf & Lateral Removal/Wire Lift	40.00	548	0	0	0	548	
CM: Thin Crop	10.00	137	0	0	0	137	
CM: Vine/Cane Trim	0.50	11	6	0	0	17	
Pickup Truck Use	2.50	56	32	0	0	87	
ATV	1.00	22	1	0	0	23	
TOTAL CULTURAL COSTS	159.14	2,311	128	397	0	2,836	
Harvest:							
Harvest-Hand Labor	0.00	0	0	0	625	625	
Harvest-Bin Handling	4.00	80	7	0	116	203	
Haul	0.31	7	2	0	0	9	
TOTAL HARVEST COSTS	4.31	87	9	0	741	837	
Assessments:							
Organic Fees/Certification		0	0	60	0	60	
TOTAL ASSESSMENTS		0	0	60	0	60	
Interest on operating capital @ 7.65%						88	
TOTAL OPERATING COSTS/ACRE		2,398	137	457	741	3,821	
CASH OVERHEAD:							
Office Expense						300	
Liability Insurance						18	
Sanitation						39	
Property Taxes						1,557	
Property Insurance						109	
Investment Repairs						18	
TOTAL CASH OVERHEAD COSTS						2,040	
TOTAL CASH COSTS/ACRE						5,922	
NON-CASH OVERHEAD:		Per producing Acre		Annual Cost Capital Recovery			
Land		140,000		8,414		8,414	
Building		227		18		18	
Tools		83		11		11	
Wind Machine		565		43		43	
Vineyard Establishment		26,579		2,209		2,209	
Equipment		3,172		365		365	
TOTAL NON-CASH OVERHEAD COSTS		170,626		11,060		11,060	
TOTAL COSTS/ACRE						16,921	

*1/2 Cost charged to vineyard each year. **CM = Canopy Management

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Table 2. COSTS AND RETURNS PER ACRE to PRODUCE ORGANIC WINE GRAPES

NORTH COAST - NAPA COUNTY 2005

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Cabernet Sauvignon Wine Grapes (organic)	5.00	ton	3,928.00	19,640	
OPERATING COSTS					
Miscellaneous:					
Erosion Control Management - Straw/Silt Fence/Labor	1.00	acre	200.00	200	
Wind Machine Operation	50.00	hrac	0.91	46	
Fertilizer:					
Potassium Sulfate Fines (0-0-50)	25.00	lb	0.17	4	
Compost (includes haul, spread) 1/2 rate*	2.00	ton	32.00	64	
Water:					
Water Pumped	5.73	acin	6.98	40	
Fungicide:					
Thiolux Jet (micronized sulfur)	6.00	lb	0.95	6	
Sulfur Dust (Wilbur Ellis)	60.00	lb	0.18	11	
Serenade	4.00	lb	6.59	26	
Contract:					
Harvest: Hand	5.00	ton	125.00	625	
Rent:					
Tractors (2)	4.00	acwk	20.00	80	
Forklift (1)	2.00	acwk	18.00	36	
Assessment:					
Organic Certification & Registration	1.00	acre	60.00	60	
Labor (machine)	22.42	hrs	18.50	415	
Labor (non-machine)	144.77	hrs	13.70	1,983	
Fuel – Gas	11.80	gal	2.05	24	
Fuel – Diesel	42.02	gal	1.51	63	
Lube				13	
Machinery repair				36	
Interest on operating @ 7.65%				88	
TOTAL OPERATING COSTS/ACRE				3,821	
NET RETURNS ABOVE OPERATING COSTS				15,819	
CASH OVERHEAD COSTS:					
Office Expense				300	
Liability Insurance				18	
Sanitation Fees				39	
Property Taxes				1,557	
Property Insurance				109	
Investment Repairs				18	
TOTAL CASH OVERHEAD COSTS/ACRE				2,040	
TOTAL CASH COSTS/ACRE				5,861	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Land				8,414	
Building				18	
Tools-Shop/Field/Fuel Tanks				11	
Wind Machine				43	
Vineyard Establishment				2,209	
Equipment				365	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				11,060	
TOTAL COSTS/ACRE				16,921	
NET RETURNS ABOVE TOTAL COSTS				2,719	

*4 tons applied alternate years, 1/2 charged to farm each year.

UC COOPERATIVE EXTENSION

Table 3. MONTHLY CASH to PRODUCE ORGANIC WINE GRAPES

NORTH COAST - NAPA COUNTY 2005

Beginning JAN 05 Ending DEC 05	JAN 05	FEB 05	MAR 05	APR 05	MAY 05	JUN 05	JUL 05	AUG 05	SEP 05	OCT 05	NOV 05	DEC 05	TOTAL
Cultural:													
Weed: Cultivate Vine Row				39	39		39						116
Weed: Mow Middles			31		31								62
Erosion Control-Materials/Labor										200			200
Frost Protection				68									68
Fertilize: through drip (Potassium)							4						4
Fertilize: Compost 1X/2 Yr										64			64
Irrigation					7	14	14	17	14	3			67
Disease: Mildew (Thiolux Sulfur) 2X				33	33								65
Disease: Mildew (Sulfur Dust) 5X					34	51							85
Disease:- Mildew (Serenade) 1X							56						56
Prune: Cordon-spur pruned		426											426
Prune: Tie Canes			69										69
CM: Trunk/Cordon Suckering				370									370
CM: Sucker/Shoot Thin/Shoot Position					370								370
CM: Leaf & Lateral Removal/Wire Lift						274	274						548
CM: Thin Crop							137						137
CM: Vine/Cane Trim							17						17
Pickup Truck Use	7	7	7	7	7	7	7	7	7	7	7	7	87
ATV	2	2	2	2	2	2	2	2	2	2	2	2	23
TOTAL CULTURAL COSTS	9	435	109	519	522	348	550	26	23	277	9	9	2,836
Harvest:													
Harvest-Hand Labor									625				625
Harvest-Bin Handling									203				203
Haul									9				9
TOTAL HARVEST COSTS									837				837
Assessment:													
Organic Certification									60				60
TOTAL ASSESMENT COSTS									60				60
Interest on operating capital	0	3	4	7	10	12	16	16	22	-2	0	0	88
TOTAL OPERATING COSTS/ACRE	9	438	112	526	532	360	566	42	942	275	9	9	3,821
OVERHEAD:													
Office Expense	25	25	25	25	25	25	25	25	25	25	25	25	300
Liability Insurance		18											18
Sanitation	4	4	4	4	4	4	4	4	4	4			39
Property Taxes	779						779						1,557
Property Insurance	54						54						109
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	18
TOTAL CASH OVERHEAD COSTS	863	48	30	30	30	30	863	30	30	30	26	26	2,040
TOTAL CASH COSTS/ACRE	873	486	142	556	563	390	1,430	72	972	305	36	36	5,861

UC COOPERATIVE EXTENSION

Table 4. RANGING ANALYSIS

NORTH COAST – Napa County 2005

COSTS PER ACRE TO PRODUCE ORGANIC GRAPES FOR WINE AT VARYING YIELDS

	YIELD (ton/acre)						
	3.50	4.00	4.50	5.00	5.50	6.00	6.50
OPERATING COSTS:							
Cultural Cost	2,836	2,836	2,836	2,836	2,836	2,836	2,836
Harvest Cost	625	696	766	837	908	979	1,049
Assessment: Organic Certification & Registration*	60	60	60	60	60	60	60
Interest on operating capital	86	87	87	88	88	88	89
TOTAL OPERATING COSTS/ACRE	3,607	3,679	3,749	3,821	3,892	3,963	4,034
Total Operating Costs/ton	1,031	920	833	764	708	661	621
CASH OVERHEAD COSTS/ACRE	2,040	2,040	2,040	2,040	2,040	2,040	2,040
TOTAL CASH COSTS/ACRE	5,647	5,719	5,789	5,861	5,932	6,003	6,074
Total Cash Costs/ton	1,613	1,430	1,286	1,172	1,079	1,001	934
NON-CASH OVERHEAD COSTS/ACRE	11,060	11,060	11,060	11,060	11,060	11,060	11,060
TOTAL COSTS/ACRE	16,707	16,779	16,849	16,921	16,992	17,063	17,134
Total Costs/ton	4,773	4,195	3,744	3,384	3,089	2,844	2,636

*Varies by farm inspection time and gross organic sales

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (ton/acre)						
$/ton	3.50	4.00	4.50	5.00	5.50	6.00	6.50
2,750.00	6,018	7,321	8,626	9,929	11,233	12,537	13,841
3,142.00	7,390	8,889	10,390	11,889	13,389	14,889	16,389
3,535.00	8,766	10,461	12,159	13,854	15,551	17,247	18,944
3,928.00	10,141	12,033	13,927	15,819	17,712	19,605	21,498
4,321.00	11,517	13,605	15,696	17,784	19,874	21,963	24,053
4,714.00	12,892	15,177	17,464	19,749	22,035	24,321	26,607
5,106.00	14,264	16,745	19,228	21,709	24,191	26,673	29,155

NET RETURN PER ACRE ABOVE CASH COST

PRICE	YIELD (ton/acre)						
$/ton	3.50	4.00	4.50	5.00	5.50	6.00	6.50
2,750.00	3,978	5,281	6,586	7,889	9,193	10,497	11,801
3,142.00	5,350	6,849	8,350	9,849	11,349	12,849	14,349
3,535.00	6,726	8,421	10,119	11,814	13,511	15,207	16,904
3,928.00	8,101	9,993	11,887	13,779	15,672	17,565	19,458
4,321.00	9,477	11,565	13,656	15,744	17,834	19,923	22,013
4,714.00	10,852	13,137	15,424	17,709	19,995	22,281	24,567
5,106.00	12,224	14,705	17,188	19,669	22,151	24,633	27,115

NET RETURNS PER ACRE ABOVE TOTAL COST

PRICE	YIELD (ton/acre)						
$/ton	3.50	4.00	4.50	5.00	5.50	6.00	6.50
2,750.00	-7,082	-5,779	-4,474	-3,171	-1,867	-563	741
3,142.00	-5,710	-4,211	-2,710	-1,211	289	1,789	3,289
3,535.00	-4,335	-2,639	-942	754	2,451	4,147	5,844
3,928.00	-2,959	-1,067	827	2,719	4,612	6,505	8,398
4,321.00	-1,584	505	2,596	4,684	6,774	8,863	10,953
4,714.00	-208	2,077	4,364	6,649	8,935	11,221	13,507
5,106.00	1,164	3,645	6,128	8,609	11,091	13,573	16,055

UC COOPERATIVE EXTENSION

Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

NORTH COAST – Napa County 2005

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
05	60HP 4WD Narrow Tractor	36,000	15	7,009	3,408	148	215	3,772
05	Air Blast l3Pt Sprayer 200 gal	6,082	15	584	602	23	33	658
05	ATV 4WD	6,700	5	3,003	1,058	33	49	1,140
05	Bins 1/2 ton (2)	400	10	71	49	2	2	53
05	Bins 1/2 ton (2)	400	10	71	49	2	2	53
05	Bins 1/2 ton (2)	400	10	71	49	2	2	53
05	Bin Trailer 2Bin #2	680	15	65	67	3	4	74
05	Bin Trailer 2Bin #3	680	15	65	67	3	4	74
05	Bin Trailer 2Bin #1	680	15	65	67	3	4	74
05	Cultivator In Row	7,060	20	368	606	26	37	669
05	Duster - 3 Pt	5,000	5	1,629	898	23	33	954
05	Mower-Flail 5'	4,504	15	432	446	17	25	487
05	Pickup Truck 1/2 Ton	26,000	7	9,863	3,484	124	179	3,788
05	Truck Flatbed 20' 2 Ton	49,803	10	14,711	5,654	223	323	6,199
05	Vine Trimmer 2 - 1/2 row	14,200	10	2,511	1,740	58	84	1,881
	TOTAL	158,589		40,518	18,245	687	996	19,925
	60% of New Cost *	95,153		24,311	10,947	412	597	11,957

*Used to reflect a mix or new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
Building 400 sq ft	6,800	25		532	23	34	136	726
Vineyard Establishment	797,370	22		66,276	2,751	3,987	0	73,013
Land 35 Acres	4,200,000	25	4,200,000	252,420	0	42,000	0	294,420
Tools-Shop/Field/Fuel Tanks	2,500	10		340	9	13	50	411
Wind Machine	16,946	25	1,695	1,296	64	93	339	1,793
TOTAL INVESTMENT	5,023,616		4,201,695	320,864	2,847	46,127	525	370,363

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	30	acre	17.63	529
Office Expense	30	acre	300.00	9,000
Sanitation	30	acre	39.17	1,175

UC COOPERATIVE EXTENSION

Table 6. HOURLY EQUIPMENT COSTS

NORTH COAST – Napa County 2005

			COSTS PER HOUR						
		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
05	60HP 4WD Narrow Tractor	424	4.82	0.21	0.30	0.89	5.12	6.01	11.34
05	Air Blast 3Pt Sprayer 200 gal	90	4.01	0.15	0.22	1.00	0.00	1.00	5.38
05	ATV 4WD	30	21.17	0.67	0.97	0.50	0.79	1.29	24.10
05	Bins 1/2 ton (2)	30	0.98	0.03	0.05	0.00	0.00	0.00	1.06
05	Bins 1/2 ton (2)	30	0.98	0.03	0.05	0.00	0.00	0.00	1.06
05	Bins 1/2 ton (2)	30	0.98	0.03	0.05	0.00	0.00	0.00	1.06
05	Bin Trailer 2Bin #2	30	1.35	0.05	0.07	0.10	0.00	0.10	1.57
05	Bin Trailer 2Bin #3	30	1.35	0.05	0.07	0.10	0.00	0.10	1.57
05	Bin Trailer 2Bin #1	30	1.35	0.05	0.07	0.10	0.00	0.10	1.57
05	Cultivator In-Row	116	3.13	0.13	0.19	1.30	0.00	1.30	4.75
05	Duster - 3 Pt	90	7.19	0.18	0.27	0.73	0.00	0.73	8.37
05	Mower-Flail 5'	60	4.46	0.17	0.25	2.03	0.00	2.03	6.91
05	Pickup Truck 1/2 Ton	75	27.88	0.99	1.43	1.91	10.81	12.72	43.02
05	Truck Flatbed 20' 2 Ton	9	361.30	14.22	20.61	4.76	1.74	6.50	402.63
05	Vine Trimmer, 2 - 1/2 row	15	69.59	2.31	3.34	5.89	0.00	5.89	81.13

UC COOPERATIVE EXTENSION

Table 7. OPERATIONS WITH EQUIPMENT

NORTH COAST - Napa County 2005

Operation	Operation Month	Tractor	Implement	Non-Machine Labor (hrs/acre)	Material	Broadcast Rate/acre	Unit
Cultural:							
Weed: Cultivate Vine Row	April	60HP 4WD	Cultivator In-Row				
	May	60HP 4WD	Cultivator In-Row				
	July	60HP 4WD	Cultivator In-Row				
Weed: Mow Middles	March	60HP 4WD	Mower Flail 5'				
	May	60HP 4WD	Mower Flail 5'				
Erosion Control-Materials/Labor	October				Straw/Silt		
Frost Protection	April	Wind Machine		1.70	Propane	50.00	hrac
Fertilize through Drip	May				0-0-50	30.00	lb
Fertilize: Broadcast (Alternate Yrs)	October				Compost	2.00	ton
Irrigation	May			0.20	Water	0.57	acin
	June			0.40	Water	1.15	acin
	July			0.40	Water	1.15	acin
	August			0.50	Water	1.43	acin
	September			0.40	Water	1.15	acin
	October			0.10	Water	0.28	acin
Disease: Mildew (Micronized Sulfur)	April	60HP 4WD	Air Blast Sprayer		Thiolux	3.00	lb
	May	60HP 4WD	Air Blast Sprayer		Thiolux	3.00	lb
Disease: Mildew (Sulfur Dust)	May	60HP 4WD	Duster		Sulfur Dust	12.00	lb
	May	60HP 4WD	Duster		Sulfur Dust	12.00	lb
	June	60HP 4WD	Duster		Sulfur Dust	12.00	lb
	June	60HP 4WD	Duster		Sulfur Dust	12.00	lb
	June	60HP 4WD	Duster		Sulfur Dust	12.00	lb
Disease: Mildew (Serenade)	July	60HP 4WD	Air Blast Sprayer		Serenade	4.00	lb
Prune	February			31.10			
Tying	March			5.00			
Trunk/Cordon Suckering	April			27.00			
Sucker/Shoot Thin/Shoot Position	May			27.00			
Leaf & Lateral Removal/Wire Lift	June			20.00			
	July			20.00			
Thin Crop	July			10.00			
Vine/Cane Trim	July	60HP 4WD	Vine Trimmer				
Pickup Truck Use	Annual	Pickup 1/2 ton					
ATV	Annual	ATV					
Harvest: Hand Labor	September	Custom					
Harvest: Bin Handling	September	60HP 4WD	Bin Trailer/Bins				
			Bin Trailer/Bins		Rented Tractor	2.00	week
			Bin Trailer/Bins		Rented Tractor	2.00	week
				1.00	Rented Forklift	2.00	week
Haul	September	Truck Flatbed					